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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/677,880	10/03/2000	Akihiro Yoshida	197811US2	6163
22850	7590	11/20/2003	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			AGGARWAL, YOGESH K	
		ART UNIT		PAPER NUMBER
		2615		
DATE MAILED: 11/20/2003				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/677,880	YOSHIDA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Yogesh K Aggarwal	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-12 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-12 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 03 October 2000 is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.
- 13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
  - a) The translation of the foreign language provisional application has been received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ .
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>5</u> .	6) <input type="checkbox"/> Other: _____ .

***Specification***

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Digital camera with power supply for piezoelectric element and stroboscope circuit.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Udagawa (US Patent # 6,195,125)

[Claim 1]

A digital camera for acquiring image data by taking a subject image, comprising:  
imaging device which takes a subject image (col. 1 lines 6-8),  
a piezoelectric element, which displaces said imaging device (col. 5 lines 49-52 figure 1),  
wherein energy accumulating unit for supplying an electric power to other unit is used as an  
electric power supply source for said piezoelectric element [It is inherent that the power supply  
to the other unit e.g. driver 14 and the piezoelectric element 9 as shown in figure 1 is provided  
from the system controller 15].

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Udagawa (US Patent # 6,195,125) in view of Goto et al (US # 5,678,106).

[Claim 1]

Udagawa teaches the following:

A digital camera for acquiring image data by taking a subject image, comprising:  
imaging device which takes a subject image (Udagawa col. 1 lines 6-8),  
a piezoelectric element, which displaces said imaging device (Udagawa col. 5 lines 49-52 figure 1). Udagawa fails to teach energy accumulating unit for supplying an electric power to other unit is used as an electric power supply source for said piezoelectric element. However the following limitations are well known in the art as evidenced by Goto (col. 13 lines 13-15 figure 1).

Therefore taking the combined teachings of Goto and Udagawa as a whole, it would have been obvious to one skilled in the art to incorporate an energy accumulating unit for supplying an electric power to other unit used as an electric power supply source for said piezoelectric element. Doing so would provide a strobe for better imaging and in low light conditions.

[Claim 2]

The digital camera according to claim 1, wherein said energy accumulating unit is composed of a main capacitor for stroboscope emission provided inside or outside, and said piezoelectric

element is charged by the energy accumulated in this main capacitor (Goto, col. 13 lines 13-15 figure 1, col. 14 lines 61-63 figure 1).

[Claim 8]

Udagawa teaches the following:

A digital camera capable of taking an image by shifting pixels, comprising:  
imaging device which takes a subject image (col. 1 lines 6-8),  
a piezoelectric element, which displaces said imaging device (col. 5 lines 49-52 figure 1),  
wherein said control unit controls to take a first image in a state not displacing said imaging device, and take a second image by charging said piezoelectric element in a state of displacing said imaging device (col. 5 lines 9-12, col. 5 lines 45-52).

Udagawa fails to teach a switching unit, which charges said piezoelectric element by the energy accumulated in a main capacitor for stroboscope emission provided inside or outside, or discharges said piezoelectric element, and control unit for controls said switching unit for controlling the charging and discharging sequence of said piezoelectric element. However the following limitations are well known in the art as evidenced by Goto (col. 13 lines 13-19 figure 1, col. 14 lines 61-63 figure 1),

Therefore taking the combined teachings of Goto and Udagawa as a whole, it would have been obvious to one skilled in the art to incorporate a switching unit which charges said piezoelectric element by the energy accumulated in a main capacitor for stroboscope emission provided inside or outside, or discharges said piezoelectric element, and control unit for controls said switching unit for controlling the charging and discharging sequence of said piezoelectric element. Doing

so would provide a piezoelectric actuator that can provide a large displacement with low electric power consumption as taught in Goto (col. 2 lines 60-62).

[Claim 9]

Udagawa teaches the following:

A digital camera capable of taking an image by shifting pixels, comprising:  
imaging device which takes a subject image (col. 1 lines 6-8),  
a piezoelectric element, which displaces said imaging device (col. 5 lines 49-52 figure 1),  
wherein said control unit controls to take a first image in a state not displacing said imaging device, and take a second image by charging said piezoelectric element in a state of displacing said imaging device (col. 5 lines 9-12, col. 5 lines 45-52).

Udagawa fails to teach the following limitations. However the following limitations are well known in the art as evidenced by Goto.

- (a) a switching unit which charges said piezoelectric element by the energy accumulated in a main capacitor for stroboscope emission provided inside or outside, or discharges said piezoelectric element. (Goto, col. 13 lines 13-19 figure 1, col. 14 lines 61-63 figure 1),
- (b) and control unit which controls said switching unit for controlling the charging and discharging sequence of said piezoelectric element (col. 17 lines 44-45)[CPU controls figure 3 to 9 in which figure 9 explains the charging and discharging of the piezoelectric actuator],
- (c) wherein said switching unit includes a charge adjusting circuit for stopping the charging operation when the charged voltage in said piezoelectric element becomes a specified value to hold this charged voltage (Goto, col. 22 lines 52-54 Step 144 figure 9)[Setting a certain delay

time means after a predetermined time the charging of the capacitor is stopped by a charge adjusting circuit],

(d) and restarting charging operation when the charged voltage in said piezoelectric element becomes lower than a specified value (col. 22 lines 60-67 Step 147-149)[After the piezoelectric actuator is discharged by setting a certain delay time in Step 147 i.e. after it becomes a specified value, a charging operation is started again as taught in col. 22 lines 66-67],

Therefore taking the combined teachings of Goto and Udagawa as a whole, it would have been obvious to one skilled in the art to incorporate the limitations (a)-(d). Doing so would provide a piezoelectric actuator that can provide a large displacement with low electric power consumption as taught in Goto (col. 2 lines 60-62).

[Claim 10]

Udagawa teaches the following:

A digital camera capable of taking an image by shifting pixels, comprising:  
imaging device which takes a subject image (col. 1 lines 6-8),  
a piezoelectric element, which displaces said imaging device (col. 5 lines 49-52 figure 1),  
wherein said control unit controls to take a first image in a state not displacing said imaging device, and take a second image by charging said piezoelectric element in a state of displacing said imaging device (col. 5 lines 9-12, col. 5 lines 45-52).

Udagawa fails to teach the following limitations. However the following limitations are well known in the art as evidenced by Goto.

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- (a) switching unit which charges said piezoelectric element by the energy accumulated in a main capacitor for stroboscope emission provided inside or outside, or discharges said piezoelectric element (Goto, col. 13 lines 13-19 figure 1, col. 14 lines 61-63 figure 1),
- (b) and control unit which controls said switching unit for controlling the charging and discharging sequence of said piezoelectric element (col. 17 lines 44-45)[CPU controls figure 3 to 9 in which figure 9 explains the charging and discharging of the piezoelectric actuator],
- (c) Wherein said switching unit includes a charging switch circuit for turning on or off charging of said piezoelectric element (col. 22 lines 48-57 figure 9 Steps 143 and 145),
- (d) a discharging switch circuit for turning on or off discharging of said piezoelectric element (col. 22 lines 58-65 figure 9 steps 146 and 149),
- (e) a detecting circuit for detecting the charged voltage in said piezoelectric element (col. 3 lines 35-39),
- (f) and comparing circuit for comparing the charged voltage in said piezoelectric element detected by said detecting circuit and a reference voltage, said charging switch circuit turns on or off charging of said piezoelectric element on the basis of the result of comparison by said comparing circuit (col. 4 lines 9-15).

Therefore taking the combined teachings of Goto and Udagawa as a whole, it would have been obvious to one skilled in the art to incorporate the limitations (a)-(f). Doing so would provide a piezoelectric actuator that can provide a large displacement with low electric power consumption as taught in Goto (col. 2 lines 60-62).

[Claim 11]

Udagawa teaches the following:

A digital camera capable of taking an image by shifting pixels, comprising:  
imaging device which takes a subject image (col. 1 lines 6-8),  
a piezoelectric element, which displaces said imaging device (col. 5 lines 49-52 figure 1),  
wherein said control unit controls to take a first image in a state not displacing said imaging  
device, and take a second image by charging said piezoelectric element in a state of displacing  
said imaging device (col. 5 lines 9-12, col. 5 lines 45-52).

Udagawa fails to teach the following limitations. However the following limitations are well known in the art as evidenced by Goto.

- (a) switching unit which charges said piezoelectric element by the energy accumulated in a main capacitor for stroboscope emission provided inside or outside, or discharges said piezoelectric element (Goto, col. 13 lines 13-19 figure 1, col. 14 lines 61-63 figure 1),
- (b) and control unit which controls said switching unit for controlling the charging and discharging sequence of said piezoelectric element (col. 17 lines 44-45), CPU controls figure 3 to 9 in which figure 9 explains the charging and discharging of the piezoelectric actuator],
- (c) wherein said control unit controls so as to stop the charging operation when said piezoelectric element reaches a specified voltage (Goto, col. 22 lines 52-54 Step 144 figure 9)[Setting a certain delay time means after a predetermined time, the charging of the capacitor is stopped by a charge adjusting circuit which is being controlled by the CPU],

Therefore taking the combined teachings of Goto and Udagawa as a whole, it would have been obvious to one skilled in the art to incorporate (a)- (c). Doing so would provide a piezoelectric actuator that can provide a large displacement with low electric power consumption as taught in Goto (col. 2 lines 60-62).

[Claim 12]

Udagawa teaches the following:

A digital camera capable of taking an image by shifting pixels, comprising:  
imaging device which takes a subject image (col. 1 lines 6-8),  
a piezoelectric element, which displaces said imaging device (col. 5 lines 49-52 figure 1),  
wherein said control unit controls to take a first image in a state not displacing said imaging  
device, and take a second image by charging said piezoelectric element in a state of displacing  
said imaging device (col. 5 lines 9-12, col. 5 lines 45-52).

Udagawa fails to teach the following limitations. However the following limitations are well known in the art as evidenced by Goto.

- (a) switching unit which charges said piezoelectric element by the energy accumulated in a main capacitor for stroboscope emission provided inside or outside, or discharges said piezoelectric element (Goto, col. 13 lines 13-19 figure 1, col. 14 lines 61-63 figure 1),
- (b) and control unit which controls said switching unit for controlling the charging and discharging sequence of said piezoelectric element (col. 17 lines 44-45) [CPU controls figure 3 to 9 in which figure 9 explains the charging and discharging of the piezoelectric actuator],
- (c) and also controlling to stop the charging operation when said piezoelectric element reaches a specified voltage (Goto, col. 22 lines 52-54 Step 144 figure 9)[Setting a certain delay time means after a predetermined time, the charging of the capacitor is stopped by a charge adjusting circuit which is being controlled by the CPU],
- (d) wherein said switching unit includes a charging switch circuit for turning on or off charging of said piezoelectric element (col. 22 lines 48-57 figure 9 Steps 143 and 145),

(e) a discharging switch circuit for turning on or off discharging of said piezoelectric element (col. 22 lines 58-65 figure 9 steps 146 and 149),  
(f) and a detecting circuit for detecting the charged voltage in said piezoelectric element, and said control unit controls to turn on or off said charging switch circuit on the basis of the detected voltage of the detecting circuit (col. 3 lines 35-39).

Therefore taking the combined teachings of Goto and Udagawa as a whole, it would have been obvious to one skilled in the art to incorporate (a)-(f). Doing so would provide a piezoelectric actuator that can provide a large displacement with low electric power consumption as taught in Goto (col. 2 lines 60-62).

Claims 3-7 are similar to claims 8-12 respectively except that control unit controls said switching unit for controlling the charging and discharging sequence of said piezoelectric element, wherein said control unit controls to take a first image by charging said piezoelectric element in a state of displacing said imaging device, and take a second image by discharging said piezoelectric element in a state before displacement of said imaging device which is changing the sequence of the first and second image taking in claims 8-12. It is obvious to one of an ordinary skilled in the art that selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. See *In re Burhans*, 154 F.2d 690,69 USPQ 330 (CCPA 1946)[In the Specification, Page 28 lines 24-25 and Page 29 lines 1-3 the applicant discloses that the same effects are obtained if we do the process in the reverse order, that is, by taking the first image by discharging the piezoelectric element 24 and taking the second image by charging the piezoelectric element 24].

***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Fukuda et al. (US Patent # 6,441,849)
- Kino et al. (US Patent # 6,211,910)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yogesh K Aggarwal whose telephone number is (703) 305-0346. The examiner can normally be reached on M-F 9:00AM-5: 30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's primary examiner, Vu Le can be reached (703) 308-6613. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

YKA  
November 13, 2003

  
VU LE  
PRIMARY EXAMINER